

## THE NORTH AMERICAN JASSIDAE ALLIED TO THAMNOTETTIX.

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No attempt has yet been made accurately to place the North American species of Jassidae allied to *Thamnotettix* and *Athysanus*. In the present paper I propose to do this for the more common of our described forms.

The English and continental entomologists by no means agree in their use of such generic terms as *Cicadula*, *Thamnotettix*, *Limotettix* and *Athysanus*, but Fieber's system, adopted by Puton, is most widely used on the continent. This restricts *Cicadula* to those species in which the outer branch of the first sector of the elytra is obsolete or nearly so, thus leaving two anti-apical areoles instead of three, as in *Thamnotettix*. The old rule of placing the first species described under the older genera as their type is thus disregarded here, but it seems to me justifiably so, as Zetterstedt's first species of *Cicadula* (*quadrinotata*) properly belongs to his preceding genus, *Thamnotettix*.

As stated by Mr. C. W. Woodworth (*Psyche*, v. 5, p. 75, 1888) Sahlberg in his "*Cicadariae*" (1871), unwarrantably places *Cicadula* in the *Typhlocybini*, substituting it for Fieber's genus *Kybos*. Then he erected his genus *Limotettix* (not *Limnotettix* as erroneously written by Mr. Woodworth), and placed in it a selection from several of the genera as arranged by Fieber, among

which may be found most of the species of *Cicadula* as listed in M. Puton's latest catalogue.

We cannot accept Mr. James Edwards' disposition of these genera as published in his "Synopsis of the British Homoptera," nor Mr. Woodworth's limitation of the genus *Cicadula* without discarding our present artificial arrangement of this group of the Jassidae for one still more artificial.

Probably most of the genera mentioned below, viz., *Cicadula*, *Limotettix*, *Chlorotettix*, *Thamnotettix*, *Eutettix* and *Athysanus* might be considered as subgenera of but one, or possibly two, generic groups represented by *Thamnotettix* and *Athysanus*. They are certainly unsatisfactory in their characters and quite artificial, as M. Lethierry says of *Cicadula*, "Nous croyons devoir accepter le genre non comme un genre naturel . . . mais comme un genre artificiel, destiné à faciliter la connaissance et l'étude des espèces." But where large groups of species are as poor in structural characters as are the Jassidae we must form our genera so as to lighten the labor of the student as much as possible.

*Cicadula* as above restricted includes in our fauna three described species, *sexnotata*, *variata* and *punctifrons* of Fallen, all common to Europe and America, and a few forms still unde-

scribed. Here the head is broad and rounded before, as in *Limotettix*, the front is rather narrow, the sides of the pronotum are of moderate length and without a carina, and the elytra are long with a well developed appendix.

In *Thamnotettix*, as here accepted, the head is broad, obtusely angled or rounded before, front narrow, sides of pronotum rather long and carinated; outer branch of the first sector of the elytra evident; appendix well developed. In the twelve following species the sides of the pronotum are of moderate length, with a slender carina more or less distinct and a little oblique, being a little depressed anteriorly to the outer corner of the eye: *clitellarius* Say, *eburatus* V. D., \**montanus* V. D., *belli* Uhl., \**semipullatus* V. D., *flavocapitatus* V. D., \**gilletti* V. D., *geminatus* V. D., *fasciaticollis* Stål, *melanogaster* Prov., *kennicotti* Uhl., *coquelletti* V. D.

In a few species the sides of the pronotum are shorter, sometimes much shorter, with the carina obsolete or nearly so. Here belong: *fitchii* V. D., *atropunctatus* V. D., \**smithi* V. D., *decipiens* Prov., *laetus* Uhl., \**longisetæ* V. D.

*Th. subaeneus* V. D. has the sides of the pronotum quite strongly carinated, and will be noticed below under *Eutettix*.

In another group of allied species the head is still broader, well rounded before and of almost equal length across its whole width, thus recalling *Idio-*

*cerus*; the ocelli are plainly visible from above; the front is wide as in *Limotettix*, sides of the pronotum of moderate length and distinctly carinated; elytra long, with the appendix well developed, thin and subhyaline in texture, with the nervures indistinct. This genus, for which I propose the name *CHLOROTETTIX*, includes insects larger than we find in the other groups here noticed, of a uniform green color of some shade, occasionally tinged with fulvous or marked with black on the tergum. *Bythoscopus unicolor* Fitch may be taken as the type with which may be placed *Bythoscopus tergatus* Fitch and the *C. viridius* and *C. galbanatus* described below, and also two or three species as yet undescribed. Dr. Fitch's two species have been placed by Mr. Uhler in *Grypotes*, but they want the incurved clypeus characteristic of that genus, and in neurotation they approach *Thamnotettix* and *Limotettix*, between which they may be placed.

*Limotettix* I have used for a group of which three North American species are known to me: *striola* Fall., *parallelus* V. D. and *Cicadula exitiosa* Uhl. The first of these, *striola*, seems to have been intended by Sahlberg as the type of his genus, *parallelus* is closely allied to *striola*, but the position of *exitiosa* is doubtful, and it may not belong here at all. These agree in form very nearly with *Chlorotettix*, but the sides of the pronotum are short and terete and the insects are smaller, more slender, and with more pigmentation.

\* The description of these species will soon appear.

Another group, for which I propose the name *EUTETTIX*, is intermediate in its characters between *Thamnotettix* and *Athysanus*. In form the species resemble *Phlepsius*, being broader and stouter than in *Thamnotettix*. The vertex is rounded anteriorly, and more or less transversely impressed behind the apex; the front is nearly as wide as in *Athysanus*; the elytra are proportionately shorter than in *Thamnotettix*, and moderately valvated at the apex, with but one transverse nervure between the first and second sectors. The sides of the pronotum are shorter than in *Thamnotettix* and ecarinate.

The type of this genus is *Thamnotettix lurida* V. D. (Can. ent., v. 22, p. 250, 1890.) *Fassus seminudus* Say and *F. jucundus* Uhl. seem to belong here, but the latter has the head more produced and tumid without the transverse impression on the vertex. All these species recall the genus *Phlepsius* very strongly, but there the sides of the pronotum are always carinated and the elytral areoles are more distinctly inscribed with brown pigment lines.

*Thamnotettix subaenea* Van Duzee bears a decided resemblance to *lurida*, but the sides of the pronotum are strongly carinated and the elytral characters are those of *Thamnotettix*, in which genus it should undoubtedly be retained notwithstanding the difference in the form of the vertex and its general resemblance to *lurida*.

In the genus *Athysanus* I have placed the species ageing with *obsoletus* Kirschb., which I have considered our

most typical species. In these the head is about as wide as the pronotum, but moderately produced before with the anterior edge rounded and the apex obtuse. Elytra broad scarcely longer than the abdomen, or more frequently shorter, broad and usually truncated at apex, the apical areoles short and the appendix narrow or wanting; first sector connected with the second by but one transverse nervure; sides of the pronotum short, but feebly carinated. Here belong *obsoletus* Kirschb., *plutonius* Uhl. and *comma* V. D. of our fauna. The following species are smaller, with the head more produced and conical, the sides of the pronotum longer and without a carina: *curtisii* Fitch, *bicolor* V. D. and *obtusus* V. D.

Near *Athysanus* comes a form widely distributed in this country, with narrow, pointed elytra for which I have established the following genus:

#### ACINOPTERUS n. g.

General appearance of *Allygus*, but with the elytra strongly narrowed posteriorly, and the tip acute.

Head narrower than the pronotum, rounded, or somewhat produced before, with the apex subacute, hind edge broadly concave. Vertex rather short, sloping, convex or more or less impressed behind the apex, surface punctured, the anterior submargin obscurely transversely rugose, passage to the front rounded. Front rather broad, at the base slightly encroaching upon the apex of the vertex, suddenly narrowed at tip, Clypeus much widened apically. Lorae large. Cheeks wide. Pronotum broad and rather short, anterior edge broadly arcuate, posterior nearly straight; sides long, oblique, cari-

nated; lateral angles prominent, latero-posterior rounded. Scutellum rather small. Elytra narrow, lanceolate at apex, the tip acute, appendix wanting; sutural edge straight to the extreme tip; costal and apical margins continuous; apical areoles five, inner small, oblique, second largest, reaching the extreme tip; third and fourth small; fifth, or stigmatal, long and usually crossed by one or two transverse veinlets; first and second sectors united by but one transverse nervure, but there are usually three or four connecting the outer claval nervure with the claval suture; all the nervures strong; costa feebly convex. Supernumerary cell of the wings present. Otherwise as in *Athy-sanus* and *Allygus*.

*ACINOPTERUS ACUMINATUS* n. sp.

Fulvous-brown tinged with dull green or yellowish, elytral nervures pale, brown-margined, Length 5-6½ mm.

Head pale. Front with about eight brown arcs, more or less distinct. Pronotum feebly calloused on the anterior margin, with a few shallow impressions arranged parallel to the edge, more obvious in the males; lateral margin as long as the latero-posterior, acutely carinated; disc posteriorly obscurely wrinkled. Basal angles of the scutellum with a brownish triangular spot more or less apparent. Pectoral pieces usually more or less invaded with blackish, sometimes pale and immaculate. Legs pale, or suffused with sanguineous. Abdomen pale, frequently black above, excepting the broad lateral margins; infuscated on the basal and apical segments of the venter in the females; slightly suffused with a pale median line in the males. Elytra pale fulvous, frequently whitish hyaline on the disc of the costal and some of the discal areoles of the corium, and on the inner margin of the clavus, the extreme apex clouded with smoky or even blackish; nervures pale, edged with brownish, the marginal with a fuscous interruption at tip; claval suture brown. Wings smoky,

iridescent, nervures fuscous. Genitalia: Male: Valve wanting. Plates long and narrow, a little longer than the last ventral segment, about one-third wider at base than at their obtusely lanceolate, divergent tips. Pygofers twice the length of the plates, narrowed and obtusely pointed at apex armed beyond the plates with numerous stout spines. Female: Last ventral segment rather long, hind edge with a shallow median notch, either side of which is a broadly rounded lobe, retreating at the outer angles. Pygofers rather broad, their subacute apex moderately exceeded by the oviduct.

Described from 5 ♂, 3 ♀. Maryland, Sept. 29th and Aug. 4th on pines (Uhler). N. Carolina (Osborn). New Jersey (Uhler). Mountains of N. W. Colorado (Gillette). California (Coquillett).

In a male from California the lower surface of the femora are black. A female from N. Carolina has the disc of the elytra white-primrose, and all the specimens exhibit considerable variation in the extent of the black markings.

The following species of *Chlorotettix* are represented in my collection:

1. *CHLOROTETTIX UNICOLOR* Fitch.

Vertex 2½ times as broad as long, but little longer at the middle than next the eye; anterior margin very obtusely rounded. Front a little longer than broad, width at apex one-third that at the antennae. Cheeks narrow but feebly angled below the eye, forming a very narrow margin beyond the lorae. Clypeus almost rectangular. Genitalia: Male: Valve short and broad, apical margin rounded. Plates broad, sides a little concave, apices moderately produced, subacute, slightly divergent, with a few scattering spines on the margin. Female: Last ventral segment

with a rather broad shallow, subacute, notch; the edge of the thin lobe on either side, more or less sinuated or even notched. Pygofers surpassing the apex of the oviduct. Length  $7\frac{1}{2}$  mm.

This insect seems to be common throughout the northern and eastern States and Canada.

## 2. CHLOROTETTIX TERGATUS FITCH.

Character of the head same as those of the preceding species. Genitalia: Male: Valve broad triangular, apex obtuse. Plates large, broad, covering the pygofers, their sides very slightly sinuated, their tips broad and obtuse, a little inflexed and overlapping, submargin armed with a row of short spines, margin sparsely fringed with soft white hairs. Pygofers produced superiorly in a prominent angle, and below in a curved bill-hook shaped appendage enclosing the styles. Female: Last ventral segment broad, outer angles rounded, apex truncated with a lanceolate notch reaching over half way to the base; pygofers equalling in length the stout oviduct. Length 7 mm.

This species appears to be coextensive in range with the preceding than which it is less abundant, at least in western New York. It frequents damp meadows and pastures where *Carex* and other marsh grasses abound.

## 3. CHLOROTETTIX VIRIDIUS n. sp.

Form of *C. unicolor* and *tergatus*. Smaller, apple-green suffused with yellow on the connexivum, or yellowish green in alcoholic specimens. Length 6-7 mm.

Front broad and convex, sutures curved outward a little below the antennae; clypeus broad, almost rectangular; cheeks unusually broad, prominently angled below the eyes, margin beyond the lorae narrow. Genitalia:

Male: Valve broad and short, resembling somewhat in form the ultimate ventral segment than which it is a little shorter, apical margin gently arcuate. Plates nearly rectangular, transverse, hardly longer than the ultimate ventral segment, slightly produced at their distal angles, outer angles rounded, margin with a few short spines and soft hairs. Pygofers lingulate, about twice as long as the valve, whitish hyaline and thin in texture. Female: Last ventral segment broadly excavated from the prominent lateral angles nearly to the base on the median line, the sides of this incisure, at about its middle, interrupted by a short, obtuse, blackish tooth. Pygofers slightly exceeding the stout oviduct.

Color apple-green; connexivum and sometimes the edge of the dorsal segments washed with yellow; rostrum, base of the antennae, tarsi, spines of the posterior tibiae and the oviduct, soiled white or even fulvous. Elytra vitreous, slightly tinged with fulvous in the male, or green in the female; nervures greenish. Wings white, iridescent, nervures colorous. Eyes dark brown.

Described from six examples collected near New York City by Mr. E. B. Southwick, in July; one female taken at New Brunswick, N. J., July 20th, by Prof. J. B. Smith, and numerous specimens received from Mr. Howard Evarts Weed, taken in Mississippi.

This interesting species may be distinguished from *C. unicolor* and *tergatus*, its nearest allies, by its smaller size, dark green color and the form of the genitalia, which differ widely from those of any other species known to me. Apparently it is very abundant in the southern states where it replaces *C. unicolor* and *tergatus* of our northern fauna.

4. *CHLOROTETTIX GALBANATUS* n. sp.

Form of *C. unicolor* but smaller, with a longer vertex. Length 6 mm.

*Female.* Head scarcely wider than the pronotum. Vertex longer than in *unicolor* and obtusely pointed before, closely and coarsely punctured. Front longer and narrower and the apex proportionately broader than in *unicolor*. Cheeks obtusely angled below the eye, the edge straight from the angle to the tip of the clypeus forming a narrow margin beyond the lorae. Clypeus broad, slightly widened apically. Pronotum longer than in *unicolor*; margin more convex before and more concave behind than in that species. Last ventral segment with a rather broad lingulate incisure reaching nearly to its base and leaving a broadly rounded lobe on either side, the inner angles of which may be either rounded off or produced in a short tooth. Oviduct very slightly surpassing the pygofers.

Color pale yellowish green, nearly uniform over the whole insect; elytra hyaline, costa green; tergum more or less embrowned,

margins yellowish; wings white, nervures slender, pale brown; eyes, tip of the rostrum, and the claws blackish.

Described from three examples received from Mr. E. B. Southwick and captured by him in the vicinity of New York City in June and July; and one specimen taken by Mr. W. J. Palmer, Jr., of this city, on Mt. Balsam, near Asheville, N. C., in July, 1889. The latter has the notch in the last ventral segment scarcely deeper than wide and the outer angles more prominent than in the New York examples. This species differs from its congeners by its produced, almost angular vertex and in this respect is not characteristic of the genus in which I have placed it. In the form of the last ventral segment it approaches *tergatus*. The male is still unknown to me.

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